Energy Transfer in DNA-Organized, Multi-Segmental Chromophore Stacks

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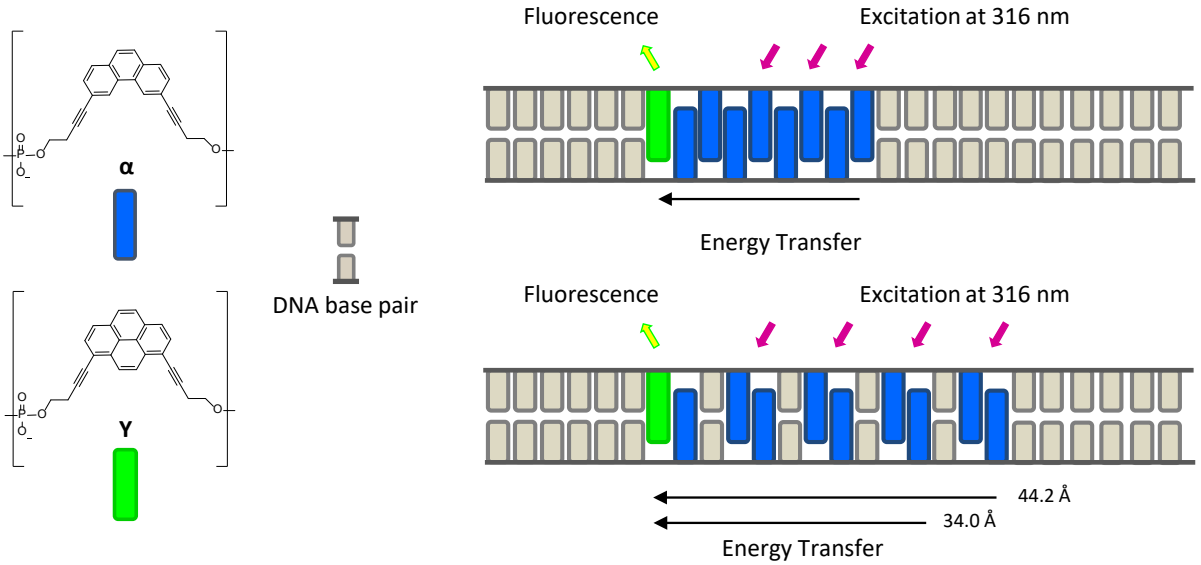
In previous work, our research group showed that the incorporation of 1,8-dicarboxamide pyrene and 3,6-dicarboxamide phenanthrene into a DNA duplex result in an efficient light harvesting antenna, where the phenanthrenes act as donors and the pyrene as an acceptor.[1] In further investigations the carboxamide derivatives were replaced by alkynyl substituted ones and the light collecting antenna was interrupted by base pairs. It was shown that the antenna also transmitted energy when interrupted by up to three base pairs. [2] In this work we show a system where the antenna is always interrupted after two phenanthrenes with one base pair. So that in addition to the energy transfer we have again the specificity of the nucleobases. This new Watson Crick specific light harvesting antenna was studied by thermal UV-vis and fluorescence spectroscopy experiments.



[1] Garo, F.; Häner, R. *Angew. Chemie - Int. Ed.* **2012, 51(4), 916-918**.

[2] Bösch, C. D.; Abay, E.; Langenegger, S. M.; Nazari, M.; Cannizzo, A.; Feurer, T.; Häner, R. *Helv. Chim. Acta* **2019**.